

## **Metadata and Semantic Interoperability**

Where do we want to be in twenty-five years? We want there to be no metadata, in the sense that these processes are invisible or transparent to users, although always accessible to those who want to check under the hood.

### **Barriers/Needs**

Many competing kinds of metadata

Incentives for metadata creation (carrots [better research, data citation] and sticks [funding])

Various forms and definitions of ontology, open research questions

Capacity building and bridging barriers between domain experts and SI experts

Moving from building ontologies to automated creation and analysis

### **Opportunities/Moving forward**

Growing focus by funding agencies on data (e.g., NSF DMP) and leverage growing focus on data to get institutional support (e.g., libraries) to provide tools, expertise, and training

Build on our existing work. Build metadata standards on existing schemas (e.g., Tree rings, LTER/ecology, DDI, FGDC) and build on existing standards (e.g. OWL, RDF, Dublin Core/DCMI) but recognize they are only a first step for many domains

Emphasize degrees (controlled vocabulary → light ontology under continual development → expressive ontologies). Promulgation of emerging best practices and processes (e.g., knowledge elicitation, families of smaller/lighter efforts that avoid monolithic ontologies)

### **Definitions**

SI: two different systems should derive the same meaning or make the same inferences from data

Metadata: data about data (vs. content)

Semantics: fixed meaning and relationships among entities

Ontology: representation of semantics (natural language → computational)